

Biomagnification of metals and organic pollutants in sea snail (*Murex trunculus*) from cockle (*Cerastoderma glaucum*) in the Mar Menor lagoon (SE Spain)

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The bioaccumulation of pollutants occurs in some organisms and a significant increase of their concentration is favored in the next trophic level (biomagnification). This process has been observed in persistent pollutants along the trophic chain, such as metals or organochlorinated pesticides. In this study, the concentrations of metals (As, Cd, Cu, Hg, Pb and Zn), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and organochlorinated pesticides (OCPs) in sea snail (*Murex trunculus*) and cockle (*Cerastoderma glaucum*) from Mar Menor lagoon were characterized. Sea snail is a natural predator of cockles in the Mar Menor lagoon and consequently the biomagnification of metals and organic pollutants was assessed in different areas from this lagoon.

Two sampling campaigns were performed in spring and autumn of 2010, considering three sampling points in each Mar Menor area (the north area with the higher influence of Mediterranean Sea, the south one that is the most confined one and the intermediate area). Water, sediment, cockle and sea snail were simultaneously sampled in each area. The bioaccumulation of organochlorinated contaminants in cockle is lower than in oyster and noble pen shell in this lagoon (León et al., 2013) but similar PAHs bioaccumulation levels were detected in the three bivalve species. However no previous information is available about their concentrations in sea snail and their possible biomagnification in this system.

The distribution of metals and organic pollutant was heterogeneous in Mar Menor lagoon depending on the location of the different pollutant sources, the physicochemical conditions and the hydrodynamism of this system. The highest concentrations of PAHs in cockle and sea snail were detected close to the main ports and urban nuclei and to the El Albuñón Watercourse mouth. In the case of p,p'-DDE the highest bioaccumulation was detected in the central and south part of Mar Menor lagoon for both organisms, especially in the influence area of El Albuñón watercourse. However the highest concentrations of metals in cockle and sea snail were detected in the influence area of El Beal wadi (residues from Cartagena/La Unión mining areas).

Biomagnification factors (BMF) in sea snail from cockle (sea snail-cockle concentration ratio) were higher than 5 for metal and organochlorinated compounds. Concretely BMF varied between 4 and 16 for p,p'-DDE, Cd and As, between 2.8 and 7.0 for CB153 and between 1 and

30 for Pb. The highest BMF were detected close to each pollutant source, El Albuñón watercourse area for organochlorinated pesticides and El Beal wadi for metals. However similar concentrations were observed in both species for PAHs due to gastropods capability of metabolize these pollutants.

References

León, V.M., Moreno-González, R., González, E., Martínez, F., García, V., Campillo, J.A. 2013. Sci. Total Environ., 463-464, 975-987.

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